Does Altruism Matter for Remittances?*

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Abstract

We provide a direct test of the impact of altruism on remittances. From a sample of Indian migrant workers in Qatar, we elicit the propensity to share with others from their responses in the dictator game and use it as a proxy for altruism. For the entire sample, we find that only migrants' income robustly explains remittances. Altruism does not seem to matter. However, we document a strong positive relationship between altruism and remittances for a subset of migrants with a loan obligation, whereas indirect tests of altruism, typically used in the literature, would fail to establish this relationship. We explain the role of loan obligations with a standard remittance model extended with reference-dependent preferences.

Keywords: remittances, altruism, reference-dependent preferences, Qatar. *JEL codes*: O12, O15, D81.

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1 Introduction

Altruism is commonly, if not routinely, viewed as one of the most important motives for remittances in transnational families.[1] However, because of its intangibility the actual impact of altruism on remitting behavior is difficult to evaluate and, therefore, its assessment is typically attempted by indirect tests. A well-known example of such a test is found in Lucas and Stark (1985), who develop a remittance model with altruism that predicts remittances decrease in the recipient household's income (or, if aggregated, the receiving country's agricultural GDP as in Bouhga-Hagbe (2006)). Such indirect tests face several limitations, the starkest of which is the presence of confounding factors. In particular, other motives for remittances, e.g., the strategic motive, are also consistent with a negative relationship between remittances and household income. Furthermore, data limitations such as the absence of longitudinal data also tend to restrict the investigator from ruling out competing motives such as moral hazard due to the recipient household reducing their labor effort in response to remittances.[2] Lastly, recent empirical evidence on the role of asymmetric information on remittance flows further exacerbates the confounding problem.[3] But given the increasing economic significance of remittances and the assumed importance of altruism, the existing approach to the study of the altruistic motive is hardly satisfactory.

In an attempt to overcome limitations of indirect tests, we provide a direct test of the impact of altruism on remittances using a measure of altruism borrowed from behavioral economics. We administered a survey and conducted a behavioral experiment with a

[1] See Stark (1995), Rapoport and Docquier (2006), and Carling (2008) for reviews of altruism and other motives for remittances. Aside from its direct role on amounts remitted, altruism can also play a role in alleviating the problem of lack of enforcement in implicit familial contracts, see Becker (1991) and Foster and Rosenzweig (2001).

[2] Cox et al (1998), de la Brière et al. (2002), Rapoport and Docquier (2006), Cox and Fafchamps (2007), and Yang (2011) provide further examples and discussion.

[3] Ambler (2015) shows that migrants remit more if their families observe their earnings, implying that the role of altruism may be overestimated under symmetric information. Also see Seshan and Zubrickas (2015) and Joseph et al. (2015) for the effects of asymmetric information on the dynamics of remittances, which, if unaccounted, may render the indirect assessment of altruism biased. Similar altruism-confounding effects are observed in other recent studies. Ashraf et al. (2015) find that migrants save more in their home country if offered greater control over their savings. De Arcangelis et al. (2015) use an economic experiment to show that labeling remittances for education raises amounts remitted, and so does increased communication, see Batista and Narciso (2013).

sample of 105 married male migrant workers from Kerala, India working in Qatar whose spouses reside in India. The behavioral experiment consisted of tasks measuring social preferences, including the dictator game in which each participant received 100 Qatari Riyals (approximately, US $27) and decided how much of that amount to give to another, anonymous participant. From their responses, we elicit the propensity to share with others and use it to proxy for each participant's degree of altruism. Our main interest lies with whether the measured variation in altruism across migrants helps to explain the observed variation in remittance behavior.

The proposed measure of altruism is widely employed in behavioral economics and psychology, see Forsythe et al. (1994) and Camerer (2003). An obvious question arises whether a measure constructed from migrants' sharing propensity with their peers is adequate for the purpose of assessing the sharing propensity with their own family. According to the kin-selection theory of Hamilton (1964), altruism will be greater with stronger degree of kinship. But as argued, e.g., by Kaplan and Gurven (2005), it is more social connectedness than kinship per se that motivates altruistic behavior among humans, and the level of altruism varies inversely with social distance irrespective of the degree of relatedness (Jones and Rachlin (2006), Rachlin and Jones (2008)). This observation allows us to postulate that our constructed measure is at least positively correlated with the migrants' intrafamilial sharing propensity due to a high degree of social connectedness among our sampled migrants who form a close social group as they reside in the same dormitory-styled accommodations for a substantial period of time.

On many dimensions, the migrants in our sample form a homogeneous group.[4] They are all male, married, blue-collar workers from the same state in India, who have either partially or fully completed secondary education, are of a similar age and mainly Hindu. In addition, the characteristics of their households in India are also homogeneous. Yet, there is one important dimension in which these migrant households differ and which will

[4]While our sample of 105 migrants is smaller than that in other studies of remittance behavior (but see Osili (2007) for a related study of the effects of altruism on remittances that uses a sample of similar size), our design employs behavioral tasks which take time to administer and for which subjects are paid. This necessarily limits our feasible sample size to one comparable to those used in laboratory experiments.

play a significant role in our analysis. About half of them report having an explicit loan obligation back home. These loan obligations are economically significant – primarily related to home ownership. Nonetheless, migrants who do and do not have loan obligations tend to be very similar with respect to their socioeconomic background, including earnings, remittances sent, and reported priorities for remittance uses, which are typically home related.

In our empirical analysis, we find no relationship between our measure of altruism and remittances when the entire sample is considered. This finding confirms our previous discussion about the complex interdependence of various factors and motives for remittances that, unless accounted for, can annihilate the effect of the altruistic motive. In this study, we uncover one such confounding factor – the possession of a loan obligation. We find that remittances rise with the degree of altruism only for the migrants with a loan obligation. Specifically, the estimated remittance schedule has a smaller intercept and a larger coefficient of altruism for the migrants with a loan obligation than for those without. It is important to note that the indirect test of altruism based on the recipient household's income does not lead to the same conclusion.

We argue that our empirical findings related to the possession of loan obligations are in line with the basic remittance model of altruism (Lucas and Stark (1985); Stark (1995, Ch. 1)) extended with reference-dependent preferences. In particular, we introduce a reference point for remittances, similar to benchmark remittances in Hoddinott (1994), against which a migrant's utility from remittance is measured.[5] The reference point can be thought of as the amount of money that the migrant is expected to transfer home, as determined by existing obligations, family needs, or social comparisons. For instance, Chort et al. (2012) find that Senegalese migrants in France and Italy face ostracism and loss of access to services provided by a migrant network of their countrymen in the host country if remittances sent fall short of the expected norm. We further discuss the salience of reference dependence for remitting behavior later in the text. Lastly, we assume loss aversion (Kahneman and Tversky (1979)): A migrant experiences a positive

[5]Also see Seshan and Zubrickas (2015) for a model with a threshold for remittances endogenously determined.

utility if his remittance is above the reference point and a negative utility if below, with losses looming larger than gains.

If migrants without loan obligations face more uncertainty about the reference point for remittances, an assumption that we justify later, we show that the theoretical predictions of the model closely match our empirical results. An increase in uncertainty about the reference point raises the risk and resultant disutility of falling short of the expectations back home if the amount remitted is relatively low, thus, prompting the loss-averse migrant to increase his remittance. But if the amount initially remitted is sufficiently large so that the risk of undershooting the reference point is negligible and is rather dominated by the risk of overshooting the reference point, then the relationship between remittances and uncertainty turns negative due to the diminishing utility of remittances past the reference point. Thus, given a positive relationship between remittance and altruism all else equal, the model predicts a flatter remittance schedule in altruism for migrants with less certainty about remittance expectations, i.e., without loan obligations, in accordance with our empirical results. All in all, the altruistic motive can be diminished by loss aversion coupled with uncertainty about remittance expectations.

The remainder of the paper is organized as follows. In Section 2, we describe the data and compare the characteristics of migrants that report an explicit loan obligation to those that report none. Section 3 presents the empirical analysis. In Section 4, we discuss implications for remittances resulting from reference-dependent preferences and offer an interpretation of our empirical results. The last section concludes the study.

2 Data

Our data come from two sources. First, data on migrants' personal and household characteristics, income, remittances, assets, consumption, and loans were collected through a survey administered to a sample of migrant workers in Doha, Qatar. To limit heterogeneity, we aimed at married, blue-collar workers from Kerala, India, whose spouses remained behind and who were of Hindu faith and had at most a high-school diploma. A working

sample of 203 individuals from across seven dormitory-styled accommodations located in Doha's Industrial Area completed a baseline survey in April and May 2012, conducted by a local survey firm staffed with migrants from Kerala.[6] Furthermore, to better control for individual heterogeneity, the surveyed migrants also completed exercises to gauge their attitude toward risk involving real payouts.[7]

Our second source of data comes from the behavioral experiment we conducted with a subset of the migrant workers who had completed the survey. Specifically, a few weeks after the surveys were completed, we invited all migrants who took part in the survey to the campus of the Georgetown University in Doha on a weekend to participate in a series of behavioral games. Transportation was provided. A total of 105 migrants accepted the invitation. Table A1 in Appendix A shows that attrition is uncorrelated with any observed characteristic of migrants and their household in India.[8]

On campus, the migrants played the public good, trust, dictator, and ultimatum games with real payouts based on earnings in one randomly selected game. For the present study, which focuses on altruism, we only consider behavior in the dictator game. In this game, the participants were randomly matched in pairs, but the identity of the paired participant was never revealed. Each participant was then asked to decide how much of a 100 Qatari Riyal endowment (approximately US $27, the equivalent of about two-days worth of the average migrant's salary) he would share with his anonymous partner.[9] The mean and median transfers made in the dictator game were 37% and

[6]Male interviewers would randomly select one migrant to be interviewed per room at each accommodation. We could not explicitly prohibit individuals of other faiths from participating but did so indirectly by stating that the campus visit would be on a Friday (which is a weekend day in Qatar), the day when church services were normally held in addition to the mid-day congregation prayer for Muslims. Some leeway was given to interviewers to enroll individuals with post-secondary education provided that this group formed a minority of the sample.

[7]Subjects were asked to choose from one of six choices, each offering two possible rewards depending on a coin toss. The choices were (1) QR 500 or QR 500 (2) QR 450 or QR 950, (3) QR 400 or QR 1200, (4) QR 300 or QR 1500, (5) QR 100 or QR 1900 or (6) QR 0 or QR 2000. Lower numbered choices would reflect a greater degree of risk aversion. Workers were told that 40 of them (about 20%) would be selected at random to be paid for choices.

[8]Although we invited the migrant workers to come to campus on a weekend, some of them were asked by their management to work, which mostly explains the attrition.

[9]The English translation of the instructions of the dictator game from Malayalam, the local language of Kerala, is available upon request. Along with written instructions, the participants were also shown voiced PowerPoint presentations about the games played. Additionally, there were Malayalam-speaking assistants trained to help participants in better understanding the games.

40% of the endowment, respectively.[10] There is a discernible variation in the amount of endowment that was shared as seen in the non-parametric distribution plotted in Figure A1 in Appendix A.

Table 1: Descriptive Statistics

	All (1)	No Loan (2)	Loan (3)	Difference (2) - (3)	T-test p-value
Migrant characteristics					
Annual income (US $)	6,456	6,657	6,199	458	0.39
Annual remittances (US $)	3,387	3,414	3,353	61	0.81
Age in years	40.24	40.49	39.91	0.58	0.70
Post high school (indicator)	0.10	0.12	0.07	0.05	0.36
Years in Qatar	5.29	5.69	4.76	0.93	0.41
Expected years in Qatar	5.47	5.29	5.70	-0.40	0.56
Altruism	0.37	0.37	0.37	0.00	0.92
Risk attitude	3.32	3.37	3.26	0.11	0.62
Household characteristics					
Household income (indicator)	0.25	0.29	0.20	0.09	0.33
Household income (US $)	326.7	449.2	169.5	279.8	0.07
Wealth (US $)	31,029	28,161	34,708	-6,547	0.19
Landholdings (acres)	0.31	0.25	0.39	-0.15	0.11
Wife in SHG (indicator)	0.37	0.25	0.52	-0.27	0.00
Size (excluding the migrant)	3.70	3.81	3.54	0.27	0.16
Own home (indicator)	0.99	0.98	1.00	-0.02	0.38
Number of bedrooms	3.02	3.00	3.04	-0.04	0.72
Motor car (indicator)	0.05	0.05	0.04	0.01	0.86
Landline telephone (indicator)	0.62	0.71	0.50	0.21	0.03
Flat panel TV (indicator)	0.35	0.36	0.35	0.01	0.93
Refrigerator (indicator)	0.70	0.71	0.67	0.04	0.68
Computer (indicator)	0.06	0.05	0.07	-0.01	0.76
Number of Observations	105	59	46		

Notes: Household wealth refer to the total value of cash (in hand, banks, postal accounts), chitty funds, stocks, gold holdings and landholdings jointly held by the migrant and household members in Kerala. Only 74 observations were recorded for "Expected years in Qatar" out of which 41 for the No Loan group.

Column 1 of Table 1 summarizes various individual and household characteristics of the participating migrants. By design, in our sample there is no variation in gender, place of origin, type of occupation, and marital status, and only little variation in religion and educational attainment. The average annual income earned in Qatar was the equivalent

[10]These numbers fall within the range of mean and median offers observed in similar studies, which is between 10% and 50% (see Camerer (2003, Table 2.4, pp 57–58)).

of US$ 6,456 of which 52% was remitted annually. Mean age was 40 years and the individuals were employed in Qatar for approximately 5.3 years. Only a quarter reported household members back in Kerala receiving an income, averaging US$ 327 in the past year.

Loans

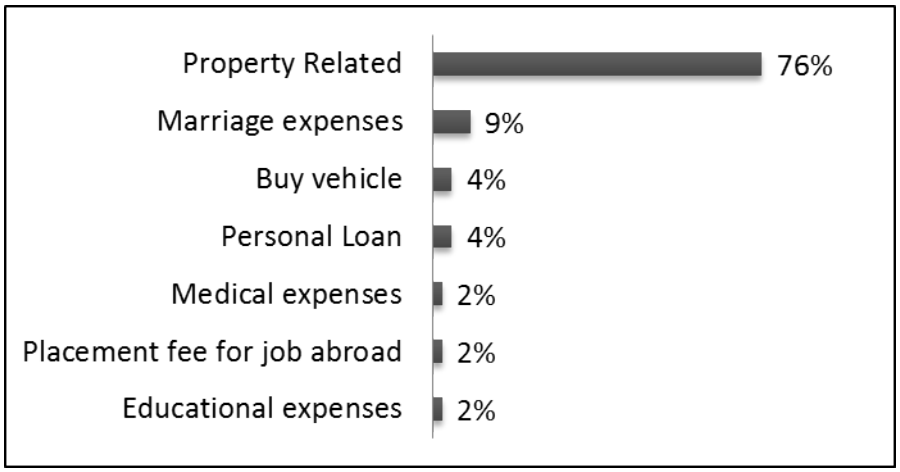
One of the key findings of this study is that loan obligations can potentially affect remittance behavior. Therefore, prior to presenting the empirical analysis we provide a short description of the loans and a comparison between the migrants with an explicit loan obligation and those without.

In our sample, 46 migrants (44%) report having a loan obligation back home. Based on migrants' and their households' characteristics, we observe that these migrants are similar to the migrants who do not report any loan obligations (see columns 2 and 3 of Table 1). Both groups exhibit the same average levels of altruism (0.37 as a share of the endowment offered in the dictator game) and of risk aversion. Furthermore, we find that the two groups are similar in terms of not only the amounts remitted but also of how remittances are reportedly spent (see Appendix B). In all but one three variables ("Other income", "Wife in self-help group," and "Landline telephone"), the difference between the migrants with loans and those without is statistically insignificant at conventional levels.

To further explore loan behavior, we first observe that loans are primary taken for housing investments. In fact, 76% of the migrants with a loan reported that it was taken to "buy a house, repair/build a house, or buy land" (see Figure 1 that shows migrants' reasons for existing loans). Those that do not possess a loan share a similar preference for housing investments. When asked how the household plans to spend future savings, 73% of the migrants without a loan reported that they would like to "buy a house, repair/build a house, or buy land" (see Figure B1 in Appendix B).

If housing investments are a priority for both groups, a question arises as to why some migrant households obtained a loan while others did not. There could be differences in

Figure 1: Reasons for Existing Loans



terms of personal and household characteristics or circumstances that, if not accounted for, would raise concerns about self-selection and omitted variable bias. A probit regression of loan take-up in Table 2 suggests that higher income and post-secondary schooling reduces the likelihood of taking a loan while having a wife who is a member of a self-help group (SHG) and larger landholdings increase the probability of possessing a loan obligation.[11] We also note that the migrant's risk aversion does not matter for loan take-up. In the ensuing empirical analysis of remittance behavior, we include wife's participation in a SHG and a host of personal and household characteristics to mitigate concerns about selectivity.

3 Empirical Model

We now turn to our study of how migrant characteristics, and particularly altruism, affect remittances. We first investigate how migrants' background and household characteristics affect remittances. Consider a parsimonious remittance specification that excludes altruism,

$$\ln R = a + X\beta + Z\gamma + \varepsilon. \tag{1}$$

[11] SHGs in Kerala typically consist of women who vouch for each other in fulfilling their loan obligations with a participating financial institution. Spouses involved in SHGs may have better access to loan opportunities relative to non-participating spouses.

Table 2: Determinants of Loan Participation (Probit)

	(1)	(2)	(3)
Migrant's income (ln)	-0.199*	-0.207*	-0.145
	(0.120)	(0.124)	(0.169)
Household income (IHST)	-0.014	-0.013	-0.033*
	(0.011)	(0.011)	(0.019)
Post high school (indicator)	-0.218**	-0.178*	-0.121
	(0.090)	(0.099)	(0.198)
Risk attitude	-	-0.025	-0.037
	-	(0.029)	(0.044)
Altruism	-	-	0.037
	-	-	(0.306)
Wife in SHG	0.171**	0.165**	0.248**
	(0.079)	(0.081)	(0.102)
Landholdings (acres)	0.074	0.060	0.170
	(0.060)	(0.061)	(0.104)
Observations	203	191	105

Notes: The dependent variable is an indicator for having a loan repayment obligation. Coefficients show the marginal effects. Columns 1 and 2 use the full sample with the addition of the risk-attitude measure in column 2 (this measure could not be obtained from 12 individuals). Column 3 is limited to individuals who participated in campus visit and completed a set of behavioral games. Robust standard errors are displayed in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Above, $\ln R$ is the log of the annual remittances; X is a vector of migrants' background characteristics (income, age, risk attitude, and years employed in Qatar); Z is a vector of household characteristics (size, wife in SHG, income, and wealth), and ε is a normally distributed error term. A dummy variable is used to measure educational attainment, with a value of 1 if the migrant sought post high-school education, and 0, otherwise. The results for the entire sample of migrants participating in the behavioral games, the No Loan and Have Loan groups are reported in columns 1, 2, and 3 of Table 3, respectively.

For the entire sample, the only statistically significant explanatory variable is the migrant's income. A 10 percent increase in foreign income is associated with a 5.9 percent rise in remittances. Aside from the intercept, no other included variables have explanatory power. However, there appear to be differences for the two groups separately studied,

Table 3: Determinants of Remittances (OLS)

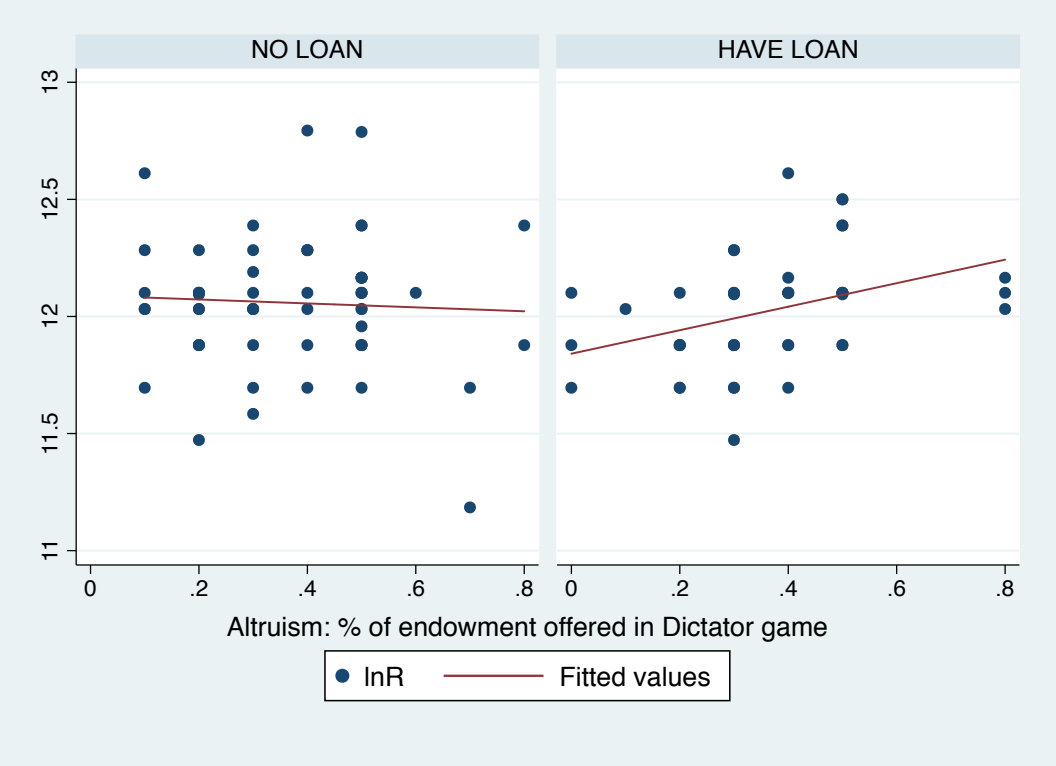
	All (1)	No Loan (2)	Have Loan (3)
Migrant's income (ln)	0.586***	0.554***	0.667***
	(0.077)	(0.105)	(0.074)
Migrant's age (ln)	0.132	0.269	0.020
	(0.112)	(0.178)	(0.134)
Post high school (indicator)	0.112	0.127	0.088
	(0.094)	(0.112)	(0.166)
Years employed in Qatar (ln)	-0.029	0.003	-0.040
	(0.031)	(0.039)	(0.033)
Household size in India	0.014	0.063	-0.013
	(0.024)	(0.042)	(0.027)
Wife in SHG	0.048	0.055	0.035
	(0.048)	(0.083)	(0.050)
Household income (IHST)	0.003	-0.007	0.021***
	(0.011)	(0.014)	(0.006)
Wealth (ln)	0.04	-0.065	0.086*
	(0.043)	(0.080)	(0.051)
Landholdings (acres)	-0.037	0.147	-0.112*
	(0.048)	(0.140)	(0.062)
Risk attitude	-0.010	-0.023	0.026
	(0.025)	(0.034)	(0.019)
Constant	2.080**	2.682*	1.356*
	(0.863)	(1.582)	(0.756)
R-squared	0.54	0.46	0.79
Number of Observations	105	59	46

Notes: The dependent variable is the log of remittances. Robust standard errors are displayed in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

as seen in columns 2 and 3. First, all the coefficients across the two groups are substantially different. Second, for the group of migrants with loan obligations the household's income and wealth has a positive effect on the amounts remitted by the migrant. Greater landholdings, however, dampen the amount remitted for the migrants with loans, all else equal. Third, the R-squared coefficient for the group of migrants with loan obligations is much higher relative to their non-loan peers (0.79 vs 0.46), which suggests that the remittance behavior is less predictable for the latter group.

If we apply the indirect test of altruism based on household income, the previous

Figure 2: Altruism and Remittances for Migrants with and without Loans



analysis suggests that altruism does not seem to matter for the entire sample nor for each group.[12] We proceed to investigate how robust this conclusion is by using our constructed measure of altruism. To further motivate our next specification that differentiates across the two groups of migrants, we provide scatter plots of altruism and remittances for each group in Figure 2. We observe that for the migrants who report a monthly loan obligation (right diagram), remittances increase in altruism. However, for those without a loan obligation (left diagram), altruism is uncorrelated with remittances.

Our basic specification that accounts for altruism is as follows

$$\ln R = a_0 + a_1 \ln Y + a_2 LOAN + a_3 ALTR + a_4 ALTR * LOAN + \varepsilon, \qquad (2)$$

where $\ln Y$ is the log of the annual income of a migrant; LOAN is a dummy variable that takes a value of 1 if a migrant reports a monthly loan obligation and 0, otherwise; and ALTR, a proxy of altruism, is the share of the endowment (in decimals) that a migrant

[12] A positive coefficient on the household's income can instead be associated with exchange and investment motives, see Rapoport and Docquier (2006, Table 2).

offers in the dictator game.

Table 4: Remittances, Loan Obligations, and Altruism

	(1)	(2)	(3)	(4)	(5)	(6)
lnY	0.623***	0.617***	0.624***	0.614***	0.575***	0.648***
	(0.082)	(0.077)	(0.075)	(0.069)	(0.065)	(0.182)
LOAN	0.036	-	0.036	-0.232**	-0.239**	-0.171
	(0.038)		(0.039)	(0.094)	(0.112)	(0.108)
ALTR		-0.004	-0.009	-0.349	-0.409	2.477
		(0.141)	(0.142)	(0.237)	(0.282)	(5.590)
ALTR*LOAN				0.727**	0.769***	0.542*
				(0.283)	(0.301)	(0.289)
Controls	No	No	No	No	Yes	Yes
ALTR*Controls	No	No	No	No	No	Yes
R-squared	0.52	0.52	0.52	0.57	0.60	0.67
Observations	105	105	105	105	105	105

Notes: The dependent variable is the log of remittances. The set of controls in columns 5 and 6 are those from Table 3. Robust standard errors are displayed in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4 reports OLS estimates for various models of specification (2). Columns 1–3 report the impact of altruism and of having a loan on remittance behavior for the entire sample. Without an interaction between these two characteristics – i.e., when treating the entire pool of migrant workers as homogeneous – neither having a loan nor being altruistic matters. However, when we interact loan obligations with altruism, we find that both the loan dummy and the interaction term matter, as shown in column 4. To check robustness, we included the set of control variables that were originally part of specification (1) in Table 3. As shown in column 5, the magnitude and statistical significance of the loan variable and altruism-loan interaction variable do not change, and no other control variables are individually or jointly significant at conventional levels (F-test of joint significance yields a p-value of 0.52).

Finally, in column 6 of Table 4 we include additional interactive terms between the set of control variables and the altruism measure. Besides mitigating concerns about omitted variables, the purpose is to see whether the impact of altruism on the group of migrants with loans stems from the possession of a loan per se rather than from other

migrant characteristics correlated with having a loan. The coefficient on the altruism-loan interactive term remains stable, which suggests, as discussed below in more detail, that explicit loan obligations matter for the effect of the altruistic motive.[13] We also note that in column 6 the coefficient of the loan variable became somewhat smaller in the absolute value and is no longer significant, which can be explained by that the added control variables have some explanatory power on the decision to take a loan.

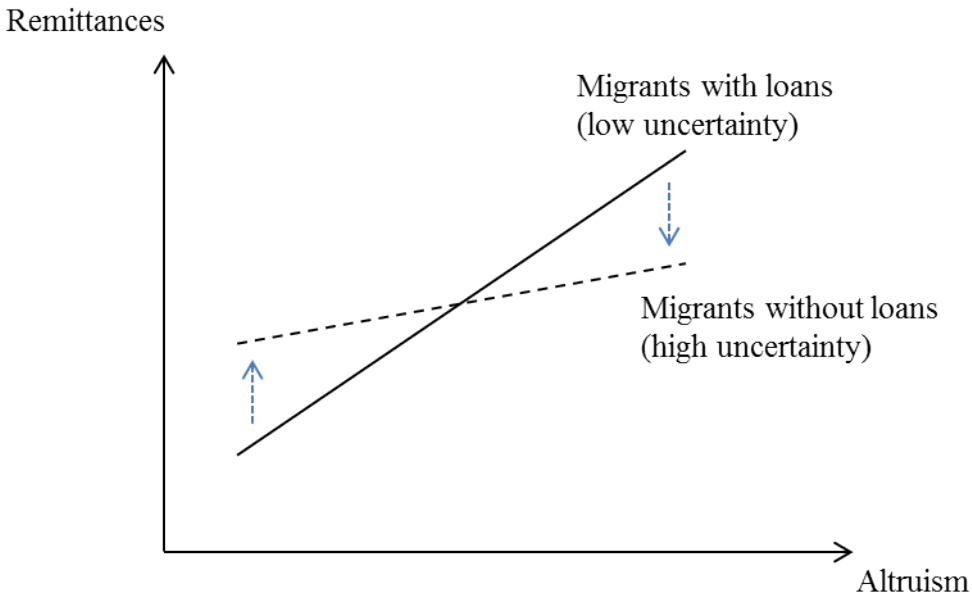
Several observations can be made based on the empirical results. First of all, for the entire sample we find no relationship between altruism and remittances. But we find a *positive* and statistically significant relationship for the subsample of migrants with a loan obligation, unlike the case when the indirect tests of altruism were applied. Using estimates from column 5 of Table 4, for the migrant with a loan obligation a 10 percentage point increase in the contribution made in the dictator game translates into a 3.6 percentage point higher remittance (p-value of 0.007). Furthermore, a negative coefficient on the dummy variable for loans indicates non-trivial differences in the amounts remitted across the two groups depending on the degree of altruism. If a migrant is selfish (0% contribution), then he remits by 21.3% less if he has a loan, but if he is of the average degree of altruism (a contribution of 37%), then he remits by 4.7% more if he has a loan.[14] In other words, the remittance schedule in altruism estimated for the group of migrants with loans crosses the corresponding schedule of the other group from below, as shown in Figure 3.

As an additional robustness check, we also examine whether other variables, such as the ones in vectors X and Z in specification (1), have any explanatory power when interacted with the LOAN dummy. The results are reported in Table A2 in Appendix A. Each column represents a version of specification (2), in which the variable ALTR is replaced with a different variable. Aside from migrants' own income, no other explanatory variable, including household income, in these regressions is statistically significant at

[13] An F-test of the equality of the coefficient on ALTR*LOAN in columns 4 and 6, and also between columns 5 and 6 cannot be rejected (p-value of 0.54 and 0.44 respectively).

[14] The results are qualitatively similar using coefficients from column 6 of Table 4. Evaluating at the mean of the control variables, a 10% increase in contribution made in the dictator game is associated with a 3.4 percentage point higher remittance for a migrant with a loan obligation. A migrant with a loan who is selfish sends 17.1% less, while those at the average degree of altruism remits by 3% more.

Figure 3: Observed Remittance Schedules in Altruism



conventional levels.

4 Reference Dependence

The finding that altruism does not explain remittance behavior for the entire sample is in line with the view that the altruistic motive can be offset by other motives for remittances or various confounding factors. Our study presents one such confounding factor. Specifically, possessing a loan obligation influences remittance behavior and, particularly, the extent to which altruism is a factor in determining remittances. To provide an explanation for this finding, we turn to a model with reference-dependent preferences. The basic idea underlying this analysis is that an explicit loan obligation brings more certainty about the reference point for remittances.

The approach is to extend the remittance model of altruism (Lucas and Stark (1985), Stark (1995, Ch. 1)) with reference dependence. Here, we highlight the main ingredients of our model and introduce it formally in Appendix C. In the model, a migrant worker derives utility from own consumption and from his ability to remit enough to meet a reference point for remittances. Specifically, he experiences a psychological cost or gain if his remittance is below or, respectively, above a reference point, with losses

looming larger than gains. The intensity of the psychological factor is in proportion to the migrant's degree of altruism. The reference point is the amount of money that the migrant is expected to send home, as determined by existing obligations, family needs, social comparisons, or other contextual circumstances. The reference point can be, however, uncertain, in which case the degree of uncertainty becomes an important factor for remittance decisions (as in Kőszegi and Rabin (2006)).

Generally, utility theories of reference dependence are motivated by empirical evidence about the effects of contextual circumstances on the individual perception of utility. These effects are typically found to take the form of loss aversion with respect to some reference point, determined by the decision maker's current position and expectations, as well as by social norms and comparisons.[15] Regarding remittance behavior, similarly to other realms of economic behavior, there are strong reasons to believe that the subjective utility of remittances depends on contextual circumstances. Examples of such circumstances could be the history of remittances, individual or common beliefs about a "fair" amount of remittances, recipients' expectations, family or peer pressures. In Gardner (2012), a study on immigration to the Persian Gulf states, it is often family pressures that are responsible for the decision to emigrate and for the amount of remittances to be sent home (see Chort et al. (2012) for peer pressures on remitting behavior). The anthropological study of Osella and Osella (2000) describes a local status categorization of migrant workers from Kerala, based on their ability to earn money abroad, and privileges associated with high status.

Returning to our study, we argue that possessing a loan obligation reduces uncertainty about the reference point for remittances. This assumption can be motivated in two ways. First, specific to our study, we observe that the two types of migrants, distinguished by explicit loan obligations, earn and remit similar amounts and have otherwise very similar socioeconomic backgrounds and consumption preferences. In particular, both types report the same purpose of their loans or savings/remittances. When asked about the purpose of their loans, most migrant workers with a loan obligation report a housing

[15]Recent applications of reference-dependent preferences include Abeler et al. (2011), Crawford and Meng (2011), Pope and Schweitzer (2011).

investment, whereas those without a loan report the same purpose among their top priorities for remittance use. Thus, to the extent that satisfying this family need is a major influence on the expectation of how much should be remitted, then the presence of a loan obligation provides greater certainty about this expectation and the reference level for remittances. Second, and more generally, even if not exposed to explicit loan obligations, migrants are frequently bound by implicit family loan contracts, typically made to finance migration costs (for the relevance of such implicit loan contracts, see Lucas and Stark (1985), Hoddinott (1994), and Poirine (1997)). Remittances are then considered as dividends from the family investment, but explicit financial requirements – which can include a loan obligation – create greater certainty about the exact size of expected dividends for which a migrant is responsible.

Assuming that migrants without a loan obligation face more uncertainty about the reference point is sufficient for the model to produce predictions that match our empirical findings. (This assumption can be justified on the grounds of the lower value of the R-squared coefficient for the no-loan group in our empirical analysis.) Let migrants' level of income be fixed and independent of their degree of altruism. Consider a migrant who remits a relatively small amount due to his low degree of altruism. Because of uncertainty there is a risk that the amount remitted falls short of the reference point. An increase in uncertainty also increases this risk, which prompts a loss-averse migrant to remit more as a hedging measure against the increased risk. This explains the negative coefficient of the dummy variable for loans in our empirical results or rather why less altruistic migrants without loans remit more. Now consider a migrant who remits a large amount due to his high degree of altruism. The risk of falling short of the reference point is negligible even with an increased degree of uncertainty. But because of the diminishing marginal utility from remittances above the reference point, an increase in uncertainty prompts a migrant to favor more private consumption and, as a result, to lower remittances. Technically, the convexity of the reference-dependent function at low levels of remittance is responsible for the increase in remittances in response to increased uncertainty, whereas its concavity at high levels of remittance – for the decrease. This explains our empirical finding that

altruistic migrants remit more if they have a loan obligation, which, as we argue, is tantamount to more certainty about the reference point for remittances. From a different perspective, the model predicts a flatter remittance schedule in altruism for migrants without loan obligations in accordance with our empirical results.

5 Conclusion

We study the relationship between altruism and remittances of migrants, using a measure of altruism elicited from the dictator game experiment. We find that, overall, there is little evidence of a universal relationship between altruism and remittances. However, we do find that the effect of altruism is much stronger on remitting behavior for migrants with loan obligations. We argue that the altruistic motive is subdued by uncertainty about remittance expectations and loss aversion. At the same time, the possession of loan obligations may reduce uncertainty about remittance expectations, subsequently making the altruistic motive more pronounced. Indirect tests may, however, fail to establish this relationship between altruism and remittances.

In parallel to the literature on reference-dependent preferences, the current study points to the importance of contextual circumstances for remitting behavior. As in other realms of economic behavior, in migration such circumstances can play an important role for the formation of reference points with subsequent effects on remittance decisions. In our study, the contextual circumstance is the existence of an explicit loan obligation. As a consequence, two similar groups can exhibit very different behavior, based on different contextual circumstances and the effects that these have on reference levels. Relatedly, Funkhouser (1995) documents a striking and puzzling difference in migrants' remittances sent to El Salvador and Nicaragua regardless of very similar country and migrant characteristics, which could possibly be another incidence of reference dependence and contextual circumstances.

Our findings call for more research on the importance of reference dependence and contextual factors for remittance behavior. For instance, the remittance model with

reference-dependent preferences could also yield novel predictions on the effects of networks in explaining remittance behavior. As a migrant worker spends a substantial amount of time interacting with his peers, the remittance behavior of his peers, who most often come from the same community back home, may potentially influence expectations and reference levels and, through these, may also influence the migrant's remittance behavior.

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Appendix A. Tables and Figures

Figure A1: Distribution of Altruism

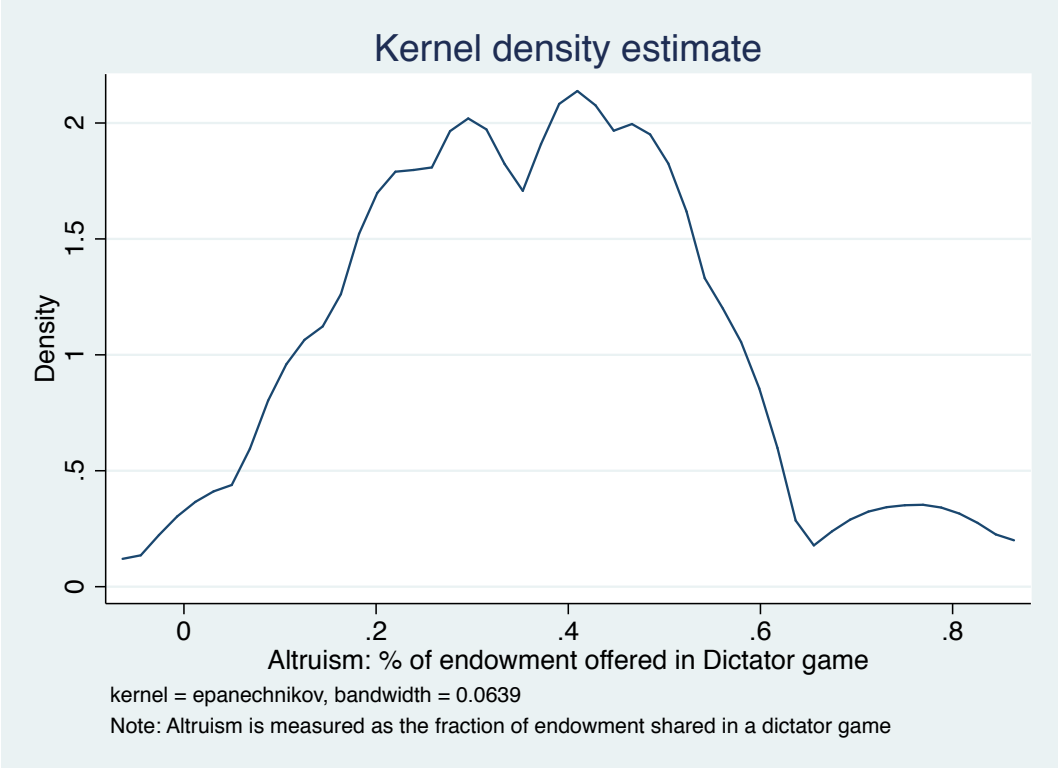


Table A1: Determinants of Attrition in Campus Visits

	(1)	(2)
Migrant's income (ln)	0.122	0.0932
	(0.126)	(0.134)
Household income (IHST)	0.00446	0.00712
	(0.012)	(0.012)
Wealth (ln)	0.0132	-0.000871
	(0.071)	(0.071)
Age	-0.00701	-0.00802
	(0.006)	(0.006)
Post high school (indicator)	0.12	0.0999
	(0.118)	(0.126)
Years employed in Qatar	0.00341	-0.00146
	(0.008)	(0.008)
Have loan (indicator)	-0.0891	-0.106
	(0.078)	(0.080)
Household size in India	-0.0061	-0.0199
	(0.042)	(0.043)
No. of bedroooms	0.0564	0.0646
	(0.082)	(0.084)
Motor car (indicator)	-0.0889	-0.129
	(0.167)	(0.170)
Landline telephone (indicator)	0.0869	0.104
	(0.085)	(0.087)
Flat panel TV (indicator)	-0.0734	-0.00318
	(0.093)	(0.099)
Refrigerator (indicator)	0.0405	0.0975
	(0.096)	(0.104)
Computer (indicator)	0.116	0.117
	(0.138)	(0.132)
Landholding (acres)	0.0272	0.0133
	(0.069)	(0.070)
Risk attitude	-	-0.0402
	-	(0.032)
Constant	-0.685	-0.226
	(1.270)	(1.358)
R-squared	0.09	0.12
Observations	203	191

Notes: The dependent variable is a indicator if an individual did not make a campus visit. Column 1 excludes 3 observations with remittance outliers (above 3 standard deviations). Column 2 includes a risk-attitude measure which 12 individuals did not provide.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A2: Remittance Regression – Additional Specifications

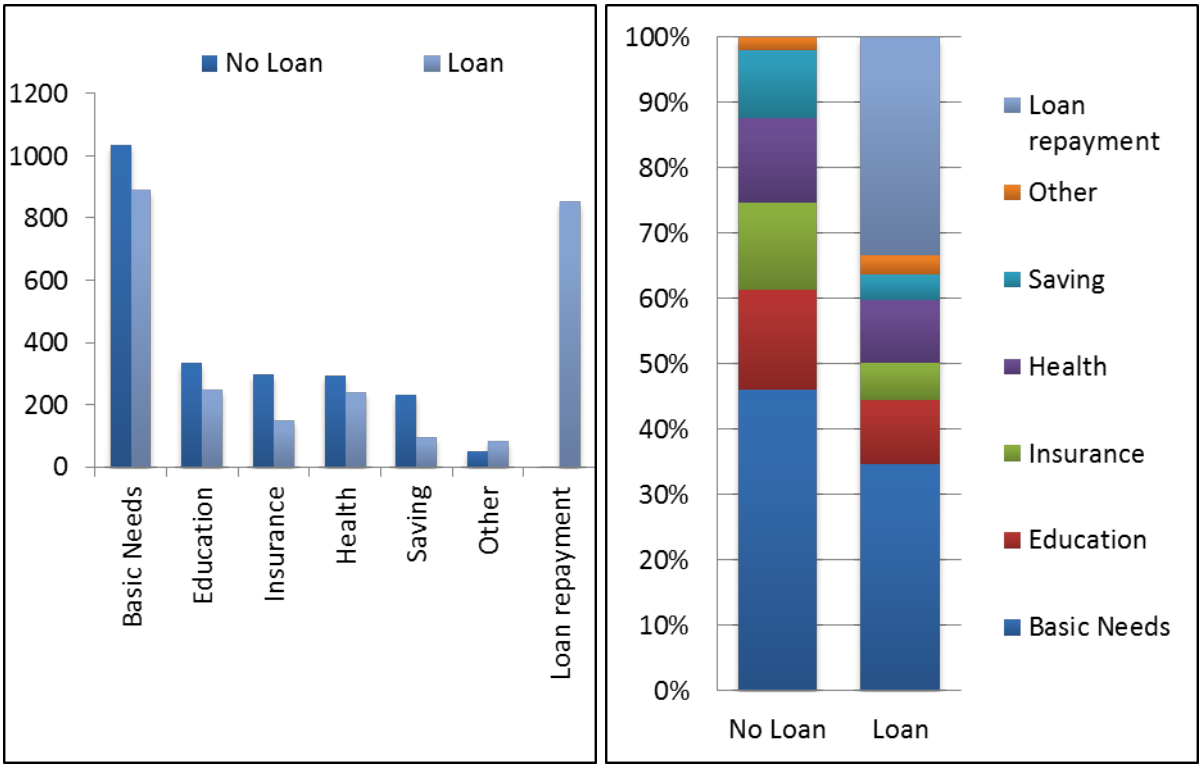
	Interactive term T =								
	Age	Post high school	Years in Qatar	Hhold size	Wife in SHG	Hhold income	Wealth	Land	Risk attitude
lnY	0.615***	0.598***	0.622***	0.628***	0.619***	0.620***	0.615***	0.631***	0.644***
	(0.081)	(0.083)	(0.078)	(0.079)	(0.083)	(0.079)	(0.083)	(0.082)	(0.078)
LOAN	0.625	0.041	0.072	0.177	0.058	0.020	-0.285	0.065	-0.114
	(0.647)	(0.038)	(0.063)	(0.238)	(0.052)	(0.035)	(0.675)	(0.048)	(0.134)
T	0.115	0.103	0.005	0.088	0.071	-0.001	0.007	0.102	-0.026
	(0.140)	(0.092)	(0.044)	(0.144)	(0.059)	(0.014)	(0.054)	(0.066)	(0.033)
T*LOAN	-0.160	-0.030	-0.032	-0.109	-0.080	0.020	0.032	-0.112	0.046
	(0.177)	(0.197)	(0.052)	(0.174)	(0.077)	(0.016)	(0.067)	(0.072)	(0.038)
R-squared	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Observations	105	105	105	105	105	105	105	105	105

Notes: The dependent variable is the log of remittances. Robust standard errors are displayed in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix B. Use of Remittance

The two groups of migrants with and without a loan are also similar with respect to their preferences for spending remittances. The migrants were asked to report the expenses, made out of their remittances, for different spending categories (including savings) during the last 12 months. A summary of the results is available in Figure B1. Panel (a) shows

Figure B1: Uses of Remittances over the Last Year



(a) Average spending by category (US $)

(b) Average spending by category (%)

average dollar spending by expenditure category and loan type, and Panel (b) shows the corresponding expenditure shares for each group. As expected, we observe that migrants without loans save more, but they also spend more under each category both in absolute and relative numbers. However, if we take the post-repayment remittances and then compare the expenditure shares between the two groups, then, except for the savings category, we see much similarity among the migrants irrespective of whether they have a loan obligation or not.[16]

[16]Arguably, Figure B1 points to a savings commitment problem among the migrants without loan obligations, as their total savings are less than the sum of savings and loan repayments of the migrants with a loan obligation. This observation is in line with the study of Bauer et al. (2012) on microfinance

Appendix C. Model

Consider a migrant worker who has to divide his earned income $Y > 0$ between remittance $R \geq 0$ sent to his family and private consumption, $Y - R \geq 0$. The migrant's utility from private consumption is given by function $u(.)$ that satisfies $u'(.) > 0$ and $u''(.) < 0$. The migrant's utility from remittance R that captures the family's welfare and their expectations is given by an increasing function $\mu(R - \overline{R})$, where $\overline{R}$ is a reference point for remittances. We assume that $\mu(.)$ satisfies the properties of a "universal gain-loss function" in Kőszegi and Rabin (2006). Specifically, the migrant experiences a negative utility from remittance if $R < \overline{R}$ and a positive utility if $R > \overline{R}$, where utility losses resonate more than gains, i.e., $\mu''(x) > 0$ for $x < 0$ but $\mu''(x) < 0$ for $x \geq 0$. The reference point $\overline{R}$ is uncertain and, for analytical convenience, assumed to be uniformly distributed over an interval $[r - e, r + e]$. The parameter e, $0 < e < r$, measures the migrant's uncertainty about the reference point.

Letting $\theta > 0$ denote the migrant's degree of altruism, measured as the weight the migrant puts on his utility from remittance, we write the migrant's total utility as

$$U(R; Y, e) = u(Y - R) + \theta \int_{r-e}^{r+e} \mu(R - \overline{R}) \frac{1}{2e} d\overline{R}. \tag{A.1}$$

The optimal remittance level, $R^* = \arg\max_R U(R; Y, e)$, is determined by the first-order condition

$$-u'(Y - R^*) + \frac{\theta}{2e} \int_{r-e}^{r+e} \mu'(R^* - \overline{R}) d\overline{R} = 0, \tag{A.2}$$

which, by the fundamental theorem of calculus, can be expressed as

$$-u'(Y - R^*) + \frac{\theta}{2e} \left(\mu(R^* - r + e) - \mu(R^* - r - e)\right) = 0. \tag{A.3}$$

Above, we assume the existence of an interior solution, which implies that the second-order condition (SOC) is satisfied. From the internal derivative $dR^*/d\theta > 0$ taken from (A.3), we can establish that a higher degree of altruism results in larger remittances, and

loans in India, where they argue that the microcredit innovation may also help in fostering self-discipline in financial behavior.

vice versa.

Now suppose that the migrant becomes less certain about the reference point $\overline{R}$, which we model by an increase in e. The effect of increased uncertainty on remittance is given by the internal derivative

$$\frac{dR^*}{de} = \frac{2u'(Y - R^*) - \theta\left(\mu'(R^* - r + e) + \mu'(R^* - r - e)\right)}{SOC}. \tag{A.4}$$

Rewrite this derivative using (A.3) as

$$\frac{dR^*}{de} = \frac{\frac{\theta}{e}(\Delta(e) - \Delta(-e))}{-SOC}, \tag{A.5}$$

where

$$\Delta(e) = e\mu'(R^* - r + e) - \mu(R^* - r + e). \tag{A.6}$$

The denominator of (A.5) is positive, but the numerator can be both positive and negative. In particular, it depends on the size of R^*, which is also to say on the degree of altruism θ.

For smaller values of R^* ($< r - e$) so that $\mu(.)$ is convex, the numerator is positive because $\Delta'(e) > 0$. But for larger values of R^* ($> r + e$) so that $\mu(.)$ is concave, the numerator turns negative because now $\Delta'(e) < 0$. Then, by continuity we obtain a flatter remittance schedule when the degree of uncertainty increases. In words, loss aversion prompts a migrant who turns less certain about remittance expectations to remit more when he initially remitted little, which is done to avoid the increased risk of undershooting the remittance target. At the same time, when the migrant initially remitted much, increased uncertainty actually makes him reduce his remittance because now the risk of overshooting the remittance target becomes higher.